

## I CLAIM:

1           1. A drill chuck comprising:

2           a chuck body centered on an axis and formed with a  
3 plurality of forwardly open angled guide passages spaced about  
4 the axis and with a radially open groove having an axially  
5 rearwardly directed front face and an axially forwardly directed  
6 rear face;

7           respective jaws displaceable generally axially in the  
8 passages and each having a row of radially outwardly directed  
9 teeth exposed at the groove;

10          a tightening ring engaged in the groove between the  
11 faces thereof, having an internal screwthread meshing with the  
12 teeth of the jaws, formed with a front face axially confronting  
13 the front groove face, and rotatable on the body about the axis,  
14 whereby rotation of the ring on the body in a tightening direc-  
15 tion moves the jaws axially forward and radially together and  
16 opposite rotation moves them axially backward and radially apart;  
17 and

18          an angled front spring washer engaged between the front  
19 faces and elastically deformable on axial forward displacement of  
20 the tightening ring to permit limited relative axial movement of  
21 the ring and body.

1                    2. The drill chuck defined in claim 1 wherein the  
2                    spring washer is dished and engages at least one of the front  
3                    faces in line contact.

1                    3. The drill chuck defined in claim 2 wherein the  
2                    front faces are planar, parallel to each other, and perpendicular  
3                    to the axis.

1                    4. The drill chuck defined in claim 1 wherein the  
2                    groove has an axially forwardly directed rear face, the chuck  
3                    further comprising

4                    an angled rear spring washer engaged between the rear  
5                    face and the ring and elastically deformable on axial rearward  
6                    displacement of the tightening ring.

1                    5. The drill chuck defined in claim 4, further com-  
2                    prising

3                    formations between the chuck body and the rear washer  
4                    for preventing rotation of the rear washer relative to the body.

1           6. The drill chuck defined in claim 5 wherein the  
2           formations include at least one radially directed bump.

1           7. The drill chuck defined in claim 5 wherein the  
2           formations include a radially outwardly open pocket on the body  
3           and a radially inwardly projecting bump formed on the rear washer  
4           and engaged in the pocket.

1           8. The drill chuck defined in claim 5 wherein the  
2           formations include radially inwardly projecting tabs formed on  
3           the rear washer and engaging in the guide passages.

1           9. The drill chuck defined in claim 5 wherein the  
2           formations include a plurality of angularly spaced and radially  
3           outwardly open pockets on the body and complementary radially  
4           inwardly projecting bumps formed on the rear washer and engaged  
5           in the pockets.

1           10. The drill chuck defined in claim 5 wherein the  
2     formations include axially extending and radially outwardly  
3     projecting teeth formed on the body and complementary radially  
4     inwardly projecting teeth formed on the ring and engaging the  
5     body teeth.

1           11. The drill chuck defined in claim 10 wherein the  
2     formations include axially extending and radially outwardly  
3     projecting teeth formed on the jaws and engaging the ring teeth.

1           12. The drill chuck defined in claim 4, further  
2     comprising  
3           a roller bearing between the rear washer and the tight-  
4     ening ring.